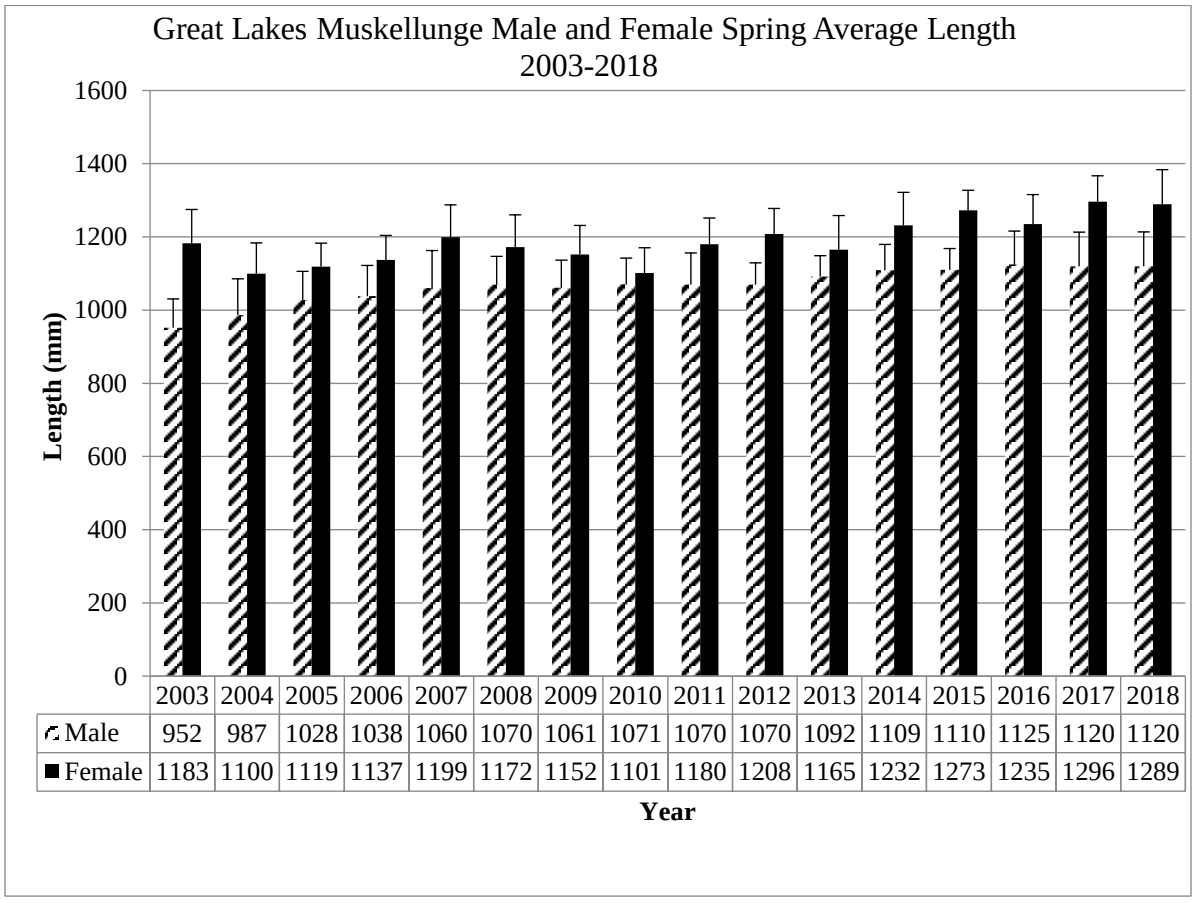
STATUS OF GREAT LAKES MUSKELLUNGE IN WISCONSIN WATERS OF GREEN BAY

The Wisconsin Department of Natural Resources (WDNR) in cooperation with several local Musky clubs and the Musky Clubs Alliance of Wisconsin initiated a Great Lakes Muskellunge reintroduction program in 1989 for the Green Bay waters of Lake Michigan to diversify the predator population of the bay.

Annual Assessments

Annual assessments to determine the status of the Green Bay Muskellunge population have been consistently conducted using fyke nets in spring and electrofishing in fall since 2003.

In 2018, the 27 male Musky captured in fyke nets had an average length of 1120 mm (44.1") and weight of 9.5 kg (20.9 lbs.) (Figure 1). The 23 female Musky captured in 2018 averaged 1289 mm (50.7") in length and averaged 16.1 kg (35.4 lbs.) in weight. Since 2003, the average length for both male and female Musky has increased, with steadily length noted since 2011.



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Male	952	987	1028	1038	1060	1070	1061	1071	1070	1070	1092	1109	1110	1125	1120	1120
Female	1183	1100	1119	1137	1199	1172	1152	1101	1180	1208	1165	1232	1273	1235	1296	1289

Figure 1. The yearly average length (mm) of male and female Muskellunge captured during spring netting surveys of the lower Fox River from 2003-2018.

Nighttime electrofishing surveys have been conducted along the length of the Fox River from the river mouth to the DePere dam during September or October since 2000 to index Muskellunge and Walleye populations. During the 2018 fall electrofishing survey, we captured eleven Musky that were greater in length than 450 mm (17.7") with ten of these fish greater in length than 760 mm (30"). CPUE was 1.6 Musky per hour and 1.5 Musky per hour respectively (Figure 2).

Since the onset of an earlier survey start date in 2009, fall CPUE has sharply declined, with other factors such as reduced stocking number and avoidance of favored fall shoreline holding areas in the Fox River because of dredging activities also contributing to the decline in CPUE. Following very low fall catches from 2011 through 2013, increasing catches have been noted recently, except in 2017, when warm river water temperatures persisted beyond the end of the survey reducing the catch of Musky. Increasing CPUE that has been noted the past 4 of 5 fall surveys are likely the result of increased stocking that has occurred since 2010.

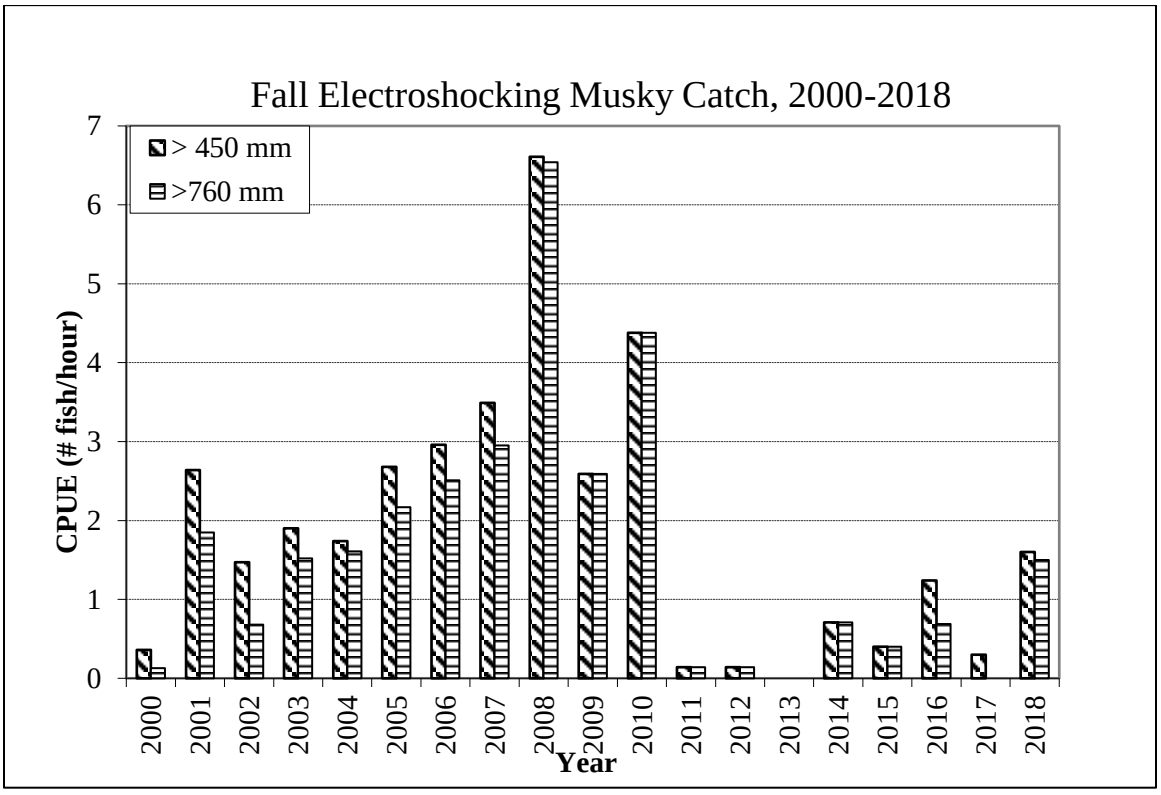


Figure 2. Catch per Unit Effort (CPUE) from night time electrofishing on the Fox River for Muskellunge greater than 450mm (17.5 in) and greater than 760mm (30 in) from 2000- 2018.

Stocking

In 2018, WDNR stocked 1,587 fingerling Musky into the Wisconsin waters of Green Bay (Figure 3). No yearling Musky were stocked in 2018. Overall, Wisconsin has stocked 165,750 fingerling and 19,900 yearling Musky since the start of this project in 1989.

Stocking since 2010 has used a combination of fingerling Musky raised at the Besadny Anadromous Fisheries Facility (BAFF) near Kewaunee, WI and yearling Musky reared at Wild Rose State Fish Hatchery. Eggs for Musky raised at BAFF were obtained from wild fish attempting

to spawn in the Fox River that were captured during spring fyke net surveys. Yearling Musky raised at Wild Rose were obtained from Michigan DNR from fish spawning in the Detroit River.

Since 2010, the majority stocking has focused on locations that have fingerling habitat and are also able to support adult Musky. These locations in include the Fox River in Brown County, the Menominee River in Marinette County and Sawyer Harbor and Little Sturgeon Bay in Door County. However, with more Musky available for stocking since 2010, smaller streams on the west shore of Green Bay including the Peshtigo River, Oconto River, Pensaukee River and Suamico River have been stocked. All stocked fingerling Musky receive a Left Ventral (LV) fin clip and all yearling stocked Musky receive a Right Ventral (RV) clip and 20% of the yearling Musky were also PIT tagged near the dorsal fin.

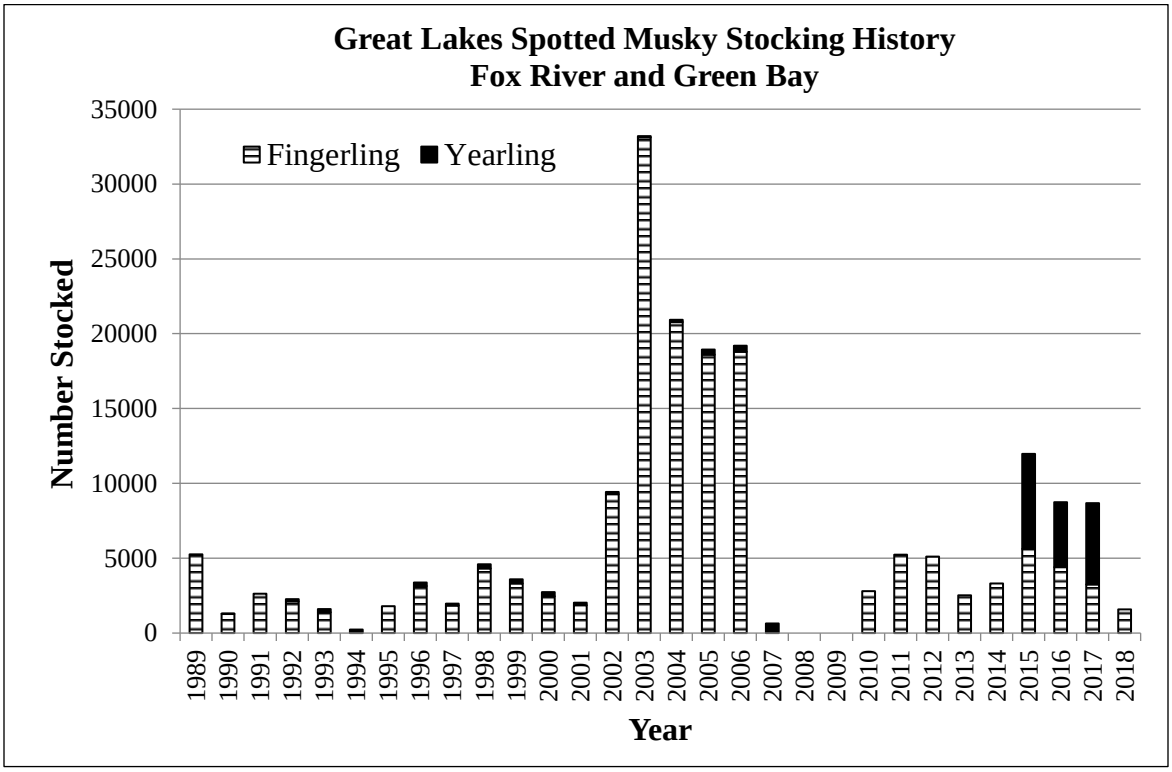


Figure 3. Great Lakes Spotted Muskellunge stocking history for fish that were stocked into Green Bay from 1989 through 2018.

Fishery

The Lake Michigan creel survey estimated that a total of 3,725 Muskellunge were caught by anglers in 2018, with a harvest of 0 Musky (Figure 4). The 2018 catch of Musky nearly doubled the 2017 catch of 1,893 and was above the average annual catch of 1,300 noted since 2005. The 2018 estimated catch of Musky the highest on record. Harvest in this fishery has been very low since 2005, with an estimated harvest of 0 Musky 7 of the last 8 years. Since harvest is low, harvest trends should be viewed with caution. Catch and release fishing and the 1372 mm (54") minimum size limit will likely limit harvest for the foreseeable future in the Green Bay Musky fishery.

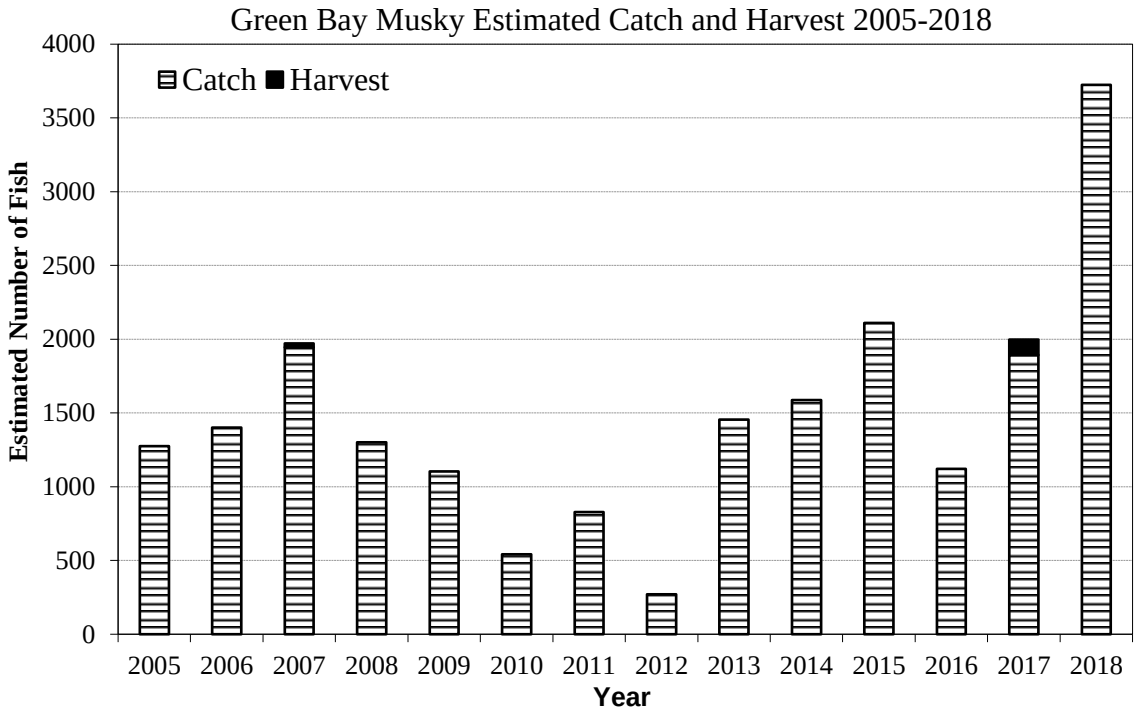


Figure 4. The estimated catch and harvest of Great Lakes Spotted Muskellunge from Green Bay from 2005 through 2018 during the open water fishing season.

A total of 64,251 hours of directed effort for Muskellunge occurred on Green Bay and the lower Fox River from March 15th through October 31st, 2018 (Figure 5). This effort declined from the 2017 level and is part of a continued decline of directed Musky fishing effort since 2014. Likely poor weather conditions on Green Bay during peak Musky months of October and November in 2018 reduced total effort. The creel survey estimated that CPUE was 0.058 fish per hour in 2018 or 17.2 hours to catch a Musky.

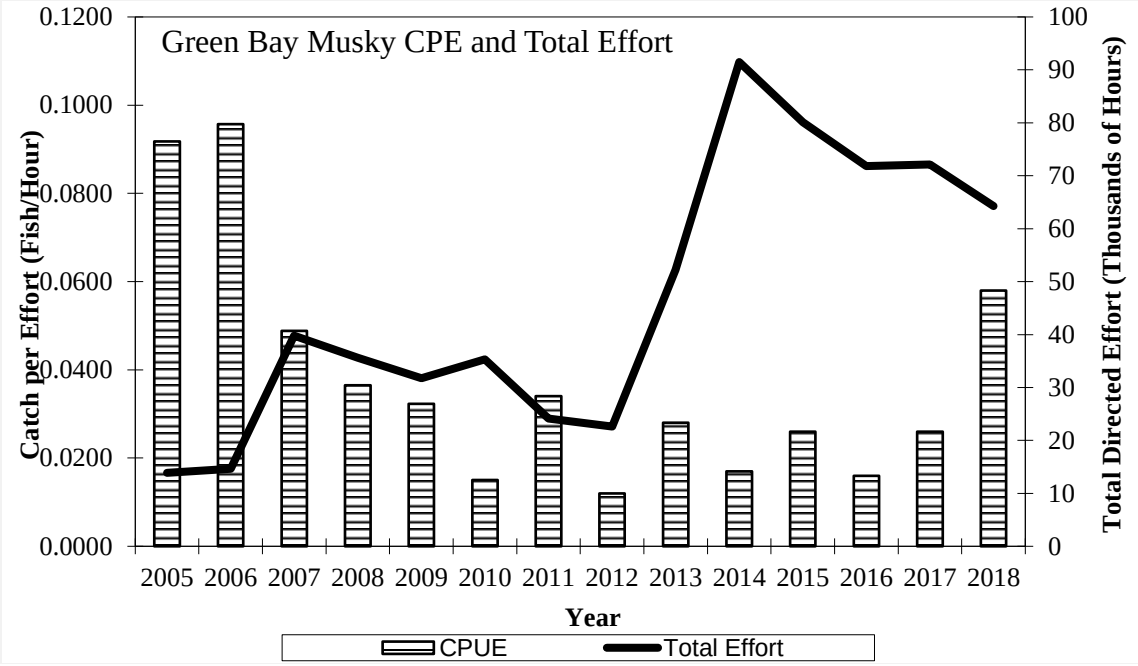


Figure 5. Total directed fishing effort for Muskellunge on Green Bay waters of Lake Michigan from 2005-2018 is displayed by the solid black line on the right axis in thousands of hours fished. The left axis shows catch per effort of Muskellunge caught from 2005 through 2018.

Future

Currently, annual stocking maintains the Green Bay Musky population with few natural recruits captured during recent surveys. Increased stocking since 2010, especially since 2015, should increase the number of Musky available to anglers in Green Bay waters in upcoming years. Based on WDNR surveys, it appears that stocked Musky grow rapidly, reach maturity, and attempt to spawn. Creel survey results indicate that the Green Bay Musky fishery remains popular with anglers and that anglers have begun to target Musky throughout Green Bay as the population spreads out from the Fox River and lower Green Bay to more northern waters. Ongoing cooperative projects with UW-Stevens Point and UW- Green Bay are using telemetry to monitor Musky movement throughout Green Bay, side scan sonar to evaluate habitat, egg deposition and fry surveys to quantify reproduction and habitat enhancement projects to improve spawning, juvenile and adult Musky habitat.

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